Petri Varsta's Professional Activities – Observed by a colleague

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Published in:
Petri Varsta Akateeminen Laivanrakentaja

Publication date:
2013

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Professor Petri Varsta has been my professional colleague for nearly three decades. During this period, we have had many good discussions on the main goals of naval architecture within universities, i.e. education, research and innovation. Therefore, when I was asked to contribute to a *Festschrift* to his honour, to be published in connection with his retirement, I felt that this could be a good opportunity to share my observations on Petri's professional activities within these areas.

I have always enjoyed very good contacts with my colleagues at the Ship Laboratory in Helsinki. This started in 1973 when, within one month after taking on my position as professor at the Department of Shipbuilding at the Technical University of Denmark (DTU), one of Petri Varsta's predecessors, Prof. Jan-Erik Jansson, used his influence to organize an invitation for me to participate as an observer at the International Ship Structures Congress (ISSC) in Hamburg. At that time, participation in ISSC was by invitation only, and an invitation was an honour and hard to get. Since then, I have had the pleasure of having continued contacts with my professional colleagues in Finland.

Through the years, my main contacts with the University in Helsinki have been through Professor Petri Varsta, and I consider him one of my close colleagues. We have met quite regularly in connection with international meetings, such as committee meetings within the International Ship Structures Congresses (ISSC), The Steering

Committee of the International Conference on Collision and Grounding of Ships (ICCGS), Det Norske Veritas' (DNV) Nordic Committee for Safety at the Sea, and several other international working groups.

Leader and Organizer.

I have also had the pleasure to study in depth the research performed at the Ship Laboratory as a member of a number of evaluation committees for Doctor of Science Candidates and the tenure and promotion committees for the academic staff at Helsinki University of Technology and later at Aalto University. This has given me a good insight into the activities at the Ship Laboratory.

Finland has been and is famous for its shipbuilding traditions, and I consider professor Varsta a strong representative of this professional excellence. Petri Varsta has always focused on research which can contribute to develop Finnish ship technology in close cooperation with the industry.

Looking at Petri's research group from the outside, it is obvious that he has placed extensive effort in organizing and participating in those research networks where cooperation between different national stakeholders has been considered crucial.

Under his guidance the development at the Ship Laboratory seems to have followed the general trend of universities world wide. Within engineering, the universities' role has over time changed from a situation where the main obligation was teaching, to a situation where the universities' duties also include research, spanning from basic research to applied research, all the way to development. As

mentioned above, during Petri Varsta's time as professor of naval architecture, the Ship Laboratory seems to have taken this development a step further, also to act as a consulting and entrepreneurial operator within research consortia. One benefit of this development has been to confirm the relevance of the university research activities by getting feed-back from the industry.

Professor Varsta has had many leading roles at the university. He has acted as the head of the Ship Laboratory as well as the head of the Department of Mechanical Engineering and lately also the Dean of the Faculty of Engineering and Architecture. Having held these leading positions, it is probably fair to say that he has had a very prominent role in the organization of the current education of naval architects for the maritime industry, of the research at the Ship Laboratory, and the networking with the maritime industry.

Education of Naval Architects

The main role of a University is to train qualified students. During the last couple of decades this training has undergone substantial changes. Previously, shipbuilding was considered an art; just recall the expression "Naval Architecture". But today, we all have to teach an applied science, that is, the students of naval architecture must be taught to master a wide range of scientific disciplines.

Unfortunately, as for university education it is never enough to provide teaching only on strong research areas, i.e. areas of excellence. Many of the objectives of university activities are defined by the outside community. This is a major problem in small countries and small institutions like in Finland. Large countries with many universities have

a better chance to ensure that no subject is completely neglected. In smaller countries this is not always so. For this reason, it is necessary to compromise on quality to ensure coverage. This dilemma was discussed in a number of meetings in a committee for co-operation between Nordic Maritime Universities organized by Det Norske Veritas. During these discussions, Professor Varsta was a keen advocate for Aalto University to join the five Nordic Technical Universities in the establishment of a new two-year international master programme in Maritime Engineering. According to this programme, the students should choose one of the universities for their first introductory year and then select a line of study in one of the four other universities for their second year of specialization. The establishment of this cooperation among our universities was a fruitful phase of harmonizing different educational cultures, and it contributed to building a foundation for mutual and continued inspiration. The combined study programme enhances the possibilities to offer research-based teaching. It was of course obvious that Aalto University should contribute to this master programme with a specialization in Passenger Ships.

Professor Varsta and the academic staff at the Ship Laboratory at Helsinki University of Technology, now Aalto University, has continuously maintained and developed a balanced curriculum which has reflected the industry's need for engineering knowledge, skill and attitude. They have created an attractive, robust, dynamic learning and working environment which has fascinated good students. I believe that the success of the Finnish maritime industry proves that they have been able to produce naval architects who can create competitiveness, efficiency and profit in the maritime industry, and

that Professor Varsta and his colleagues, through the years, have provided the students with a long term sustainable knowledge.

Research within Marine Technology

The second role of a University is research. Research performed by the academic staff creates a window to the scientific development. It is my opinion that universities are extremely important for the development of our profession. It is a fact that new “tools” are nearly always developed through research at universities before they get widespread application within other research institutions, or before they are used as design and analysis tools in industry. Worldwide examples of analysis tools developed by universities, now widely used in our profession, are: Finite element methods, Computational fluid dynamics, Fracture mechanics, Probabilistic methods, etc.

The first research papers authored by Petri Varsta I had the pleasure to read were on ice-induced stresses in icebreakers. That was in the seventies. This is an area where Finland plays a dominant role. With the increased interest in arctic navigation I find that it is a disappointment that the group gave up that line of research. Maybe Professor Varsta can take up research on structural response to ice loads again in the near future when he is relieved of his administrative work.

Especially during the later years, Petri Varsta’s research group has been able to attract a number of young talented researchers from Finland and elsewhere to join the group as doctoral students. It has been a pleasure to see how these researchers now are holding

positions at Aalto University as well as other influential jobs within the maritime engineering field in Europe.

It is characteristic that the focus of the research at Aalto University has been centred on the production of new tools, new knowledge for the industry, and new understanding of marine technical problems. Through the research work, for example, on design principles for large complicated passenger ships, and analysis of the structural response of ship structures during collision and grounding events, the group has transferred knowledge from other research fields within mechanics, such as general optimization techniques, nonlinear finite element methods, and advanced material modelling, to these applications within naval architecture. Other examples on such multidisciplinary research projects, carried out by Professor Varsta and his research group, that show potential for significant future applications are the work on laser welded web-core sandwich panels and new global hull girder models for large cruise vessels.

Participation in the international scientific community

The third task of a University Department is innovation through networking with the relevant parts of the national and international scientific community. The Ship Laboratory at Aalto University participates in a number of professional networks. This has clearly benefited the development of the scientific base for their activities, but also the identification of promising research areas.

The Ship Laboratory has been an attractive research partner because it has a good scientific staff with international experience. The research group around Professor Varsta has participated in

international research organizations such as ISSC and ICCGS, and it publishes research results in esteemed international journals. This has facilitated participation in a number of EU projects which further integrates the research on marine structures in Helsinki into the international network.

At the same time, the group has strong links to the national maritime community.

Closure

Altogether, seen from my outside position, I find that Petri Varsta and his group have made significant contributions to the maritime complex in Finland by training skilled professional engineers in cooperation with the Finnish maritime industry, and that the group has provided research results which can provide a basis for innovation in the industry. The group has become an attractive partner for knowledge building both nationally and internationally.

To finish on a more personal note, I know Petri Varsta as a person with many interests. Petri's life is multidimensional and not all about work. I especially remember that a few years ago Petri took me and some ISSC committee members, who were visiting the Aalto University, on an excursion to the sea fortress Suomenlinna, situated on a group of islands just outside Helsinki. On this tour, he gave us a most fascinating insight into not only the history of Suomenlinna but also into the history of Finland. His knowledge of Finnish history seems to be impressive.

Professor Varsta guiding ISSC committee members on an excursion to Suomenlinna. Photo Jaideep Sirkar.

Of course, the visit ended up with some locally brewed beers. This is also typical of Petri. He understands that without good food and drink we will not accomplish much.

I send my best wishes to Petri Varsta for the retirement from his current position and for his new adventures in life.